

AD-A104 191 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/S 4/2
19315B MLRS, MISSILE NUMBER V13-004, ROUND NUMBER V-169/AT-2, 1--ETC(U)
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JULY 1981

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(2)

METEOROLOGICAL DATA REPORT

193T5B MLRS
Missile Number V13-004
Round Number V-169/AT-2
17 July 1981

by (12) 22

DONALD C. KELLER
Program Support Coordinator
Phone Number (505) 679-9568
AVN Number 349-9568

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ELECTRONIC
SEP 16 1981
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ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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ECOM
UNITED STATES ARMY ELECTRONICS COMMAND

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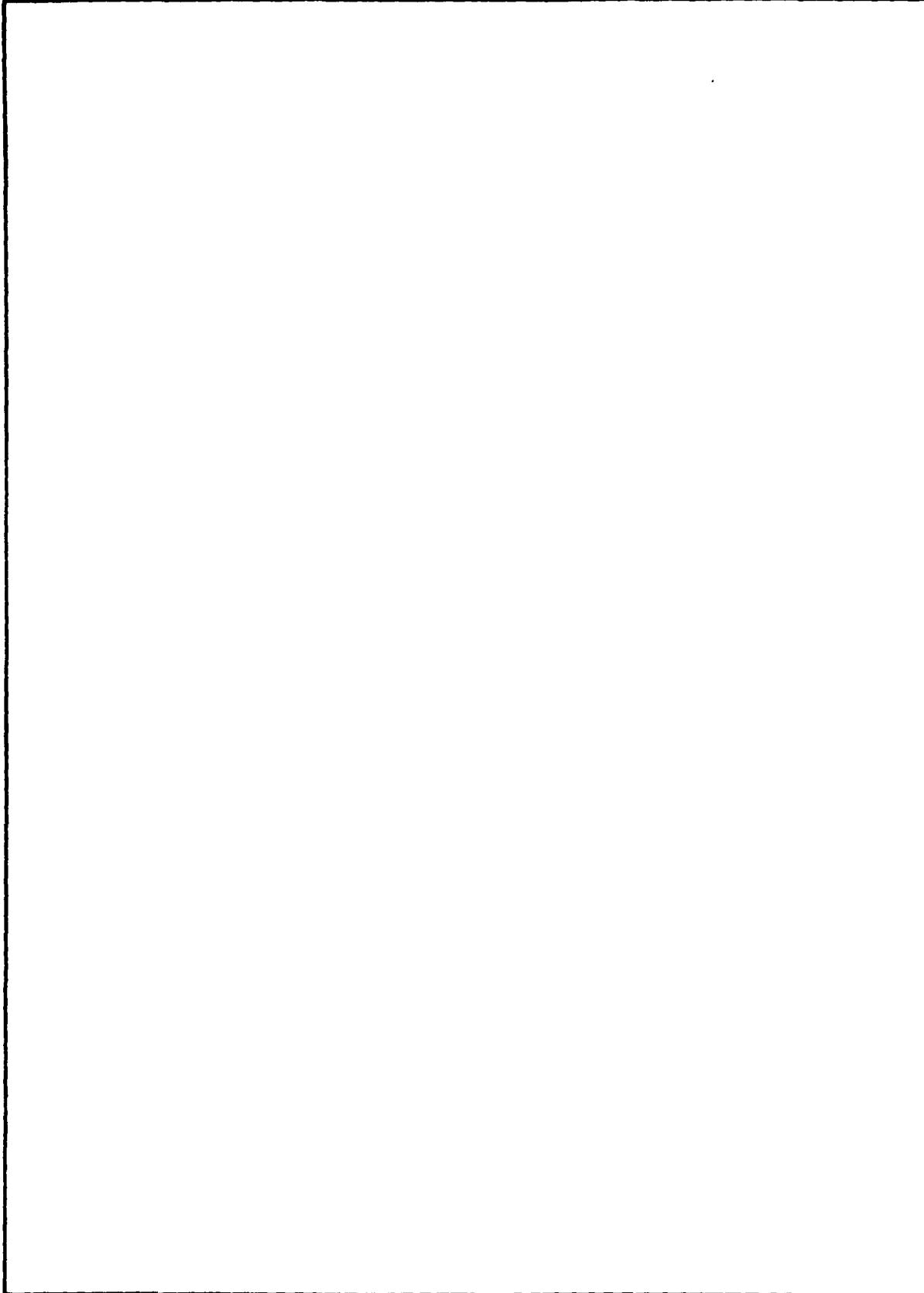
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of the 19315B MLRS, Missile Number V13-004, Round Number V-169/AT-2 presented in tabular form.		

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INTRODUCTION

19315B MLRS , Missile Number V13-004 , Round Number V-169/AT-2 .
was launched from LC-33 , White Sands Missile Range (WSMR), New Mexico,
at 1432 MDT on 17 July 1981 . The scheduled launch time was
1430 MDT .

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}\text{C}$), relative humidity, dew point ($^{\circ}\text{C}$), density (gm/m^3), Wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from Pilot-Balloon observations at:

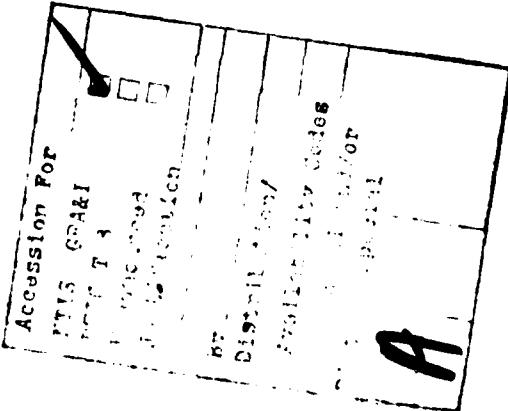
SITE AND ALTITUDE

LC-33	800 Meters
NICK	2000 Meters

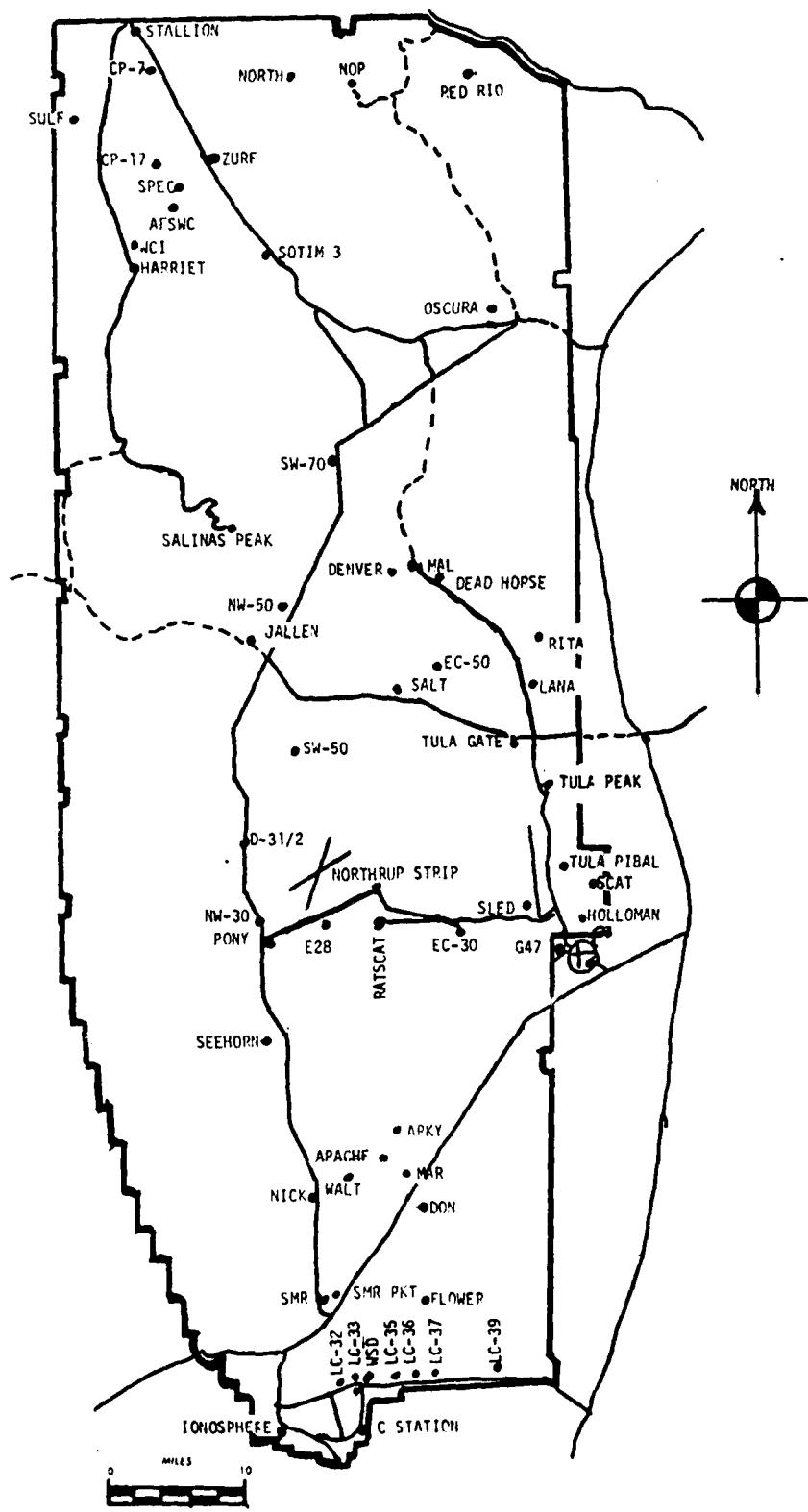
(1) Air structure data (rawinsonde) were collected at the following Met Sites.

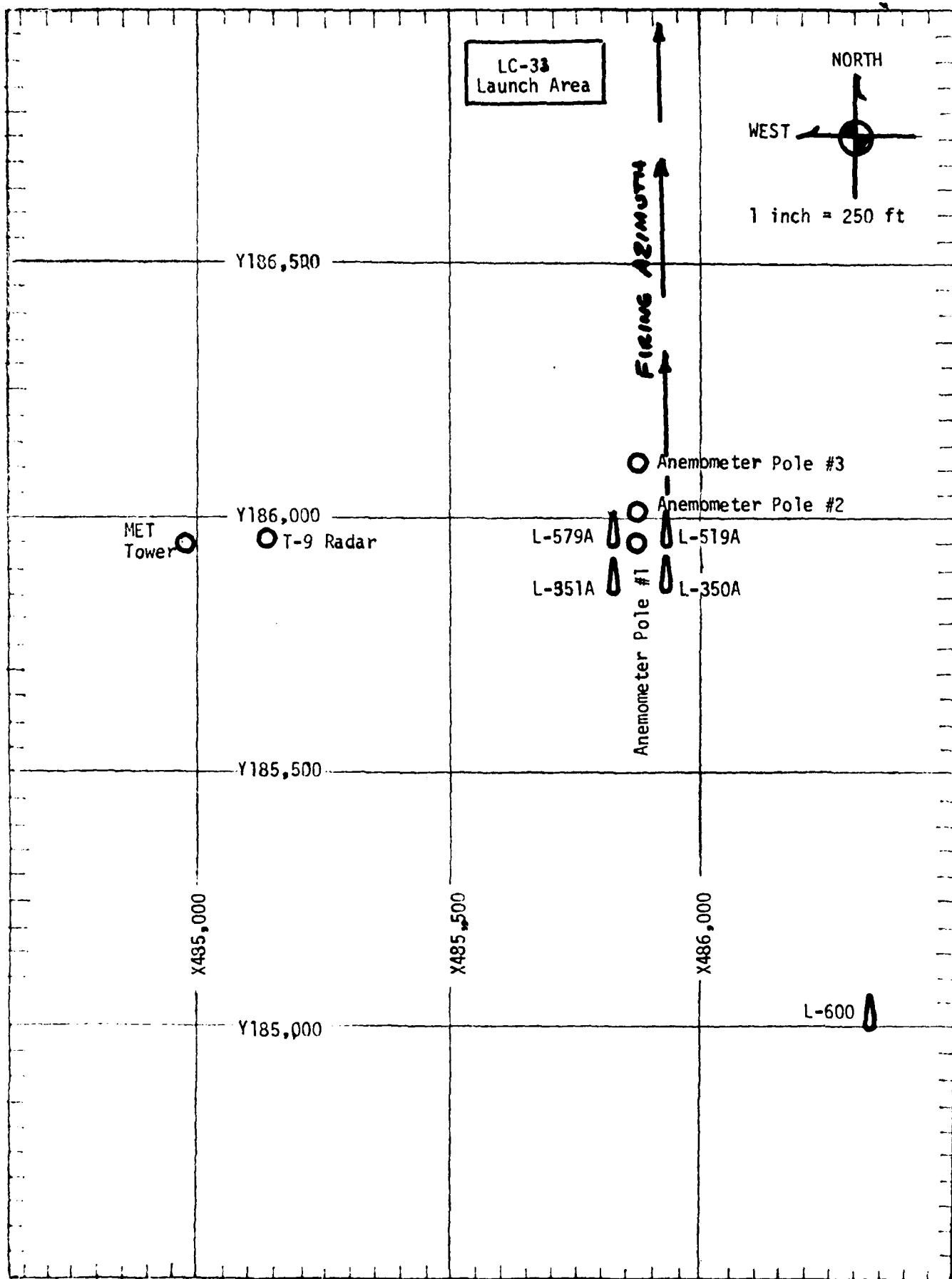
SITE AND TIME

WSD	1130 MDT
LC-37	1230 MDT
LC-37	1430 MDT



WSMR METEOROLOGICAL SITES





PROJECT SURFACE OBSERVATION

TABLE 1

DATE 17 JULY 1981

DAY MONTH YEAR

STATION LC-33X= 484,982.64 Y= 185,957.73 H= 3983.00

TIME M D I	PRESSURE mb	TEMPERATURE OF °C	DEW POINT OF °C	RELATIVE HUMIDITY %	DENSITY gm/m ³	WIND DIRECTION deg N	WIND SPEED kts	CHARACTER kts	VISIBIL- ITY
1430 m	879.1	29.8	17.4	47	1.001	240	06		40

OBSTRUCTIONS TO VISIBILITY	CLOUDS			REMARKS		
	1st LAYER	2nd LAYER	3rd LAYER	AMT	TYPE	HGT
4	CU	6500		1	C1	22000

PSYCHROMETRIC COMPUTATION

TIME:	1430	MDT
DRY BULB TEMP.	29.8	
WET BULB TEMP.	21.0	
WET BULB DEPR.	8.8	
DEW POINT	17.4	
RELATIVE HUMID.	47	

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

17 July 81 1432 MDT

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	284	04	-30	308	03	-30	286	02
-20	269	03	-20	301	03	-20	273	03
-10	276	03	-10	301	03	-10	270	03
0.0	277	03	0.0	287	03	0.0	286	04
+10	268	02	+10	285	02	+10	291	04

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	269	06	-30	275	04
-20	267	05	-20	261	05
-10	258	03	-10	247	03
0.0	257	03	0.0	250	03
+10	256	04	+10	243	04

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	270	04	-30	259	03
-20	270	03	-20	267	03
-10	256	05	-10	271	05
0.0	255	04	0.0	271	04
+10	242	03	+10	247	03

TABLE 4

T-TIME PILOT-BALLOON MEASURED WIND DATA
 DATE 17 July 1981

SITE: LC-33
 TIME: 1438 MDT
 WSTM COORDINATES:
 X= 484,837.15
 Y= 186,125.01
 H= 3,983.57

SITE: NICK
 TIME: 1432 MDT
 WSTM COORDINATES:
 X= 470,734.56
 Y= 255,775.64
 H= 4,126.57

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS	LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	240	06	SURFACE	033	02
150		CALM	150	069	04
210	215	02	210	071	05
270	210	03	270	070	04
330	208	05	330	070	04
390	207	06	390	074	04
500	194	07	500	097	03
650	178	08	650	135	03
800	166	09	800	219	02
950			950	248	05
1150			1150	254	06
1350			1350	266	02
1550			1550	292	03
1750			1750	299	07
2000			2000	294	06

DATA OBTAINED FROM
 DOUBLE THEODOLITE
 TRACKED PILOT-BALLOON
 OBSERVATION

DATA OBTAINED FROM
 SINGLE THEODOLITE
 TRACKED PILOT-BALLOON
 OBSERVATION

TABLE 5

AIMING AND T-TIME COMPUTER MET MESSAGES
17 JULY 1981

WSD 1130 MDT	LC37 1230 MDT	LC-37 1432 MDT
METCM1324064	MET CM1324063	METCM1324063
00498004 30170881	00507003 30470878	00391001 30640877
01516003 30040871	01517003 30170868	01356002 30260867
02183002 29720846	02471003 29830844	02341005 30050843
03404002 29380808	03473003 29500806	03319004 29690805
04389003 29090762	04411005 29120760	04244005 29220760
05600003 28750719	05601002 28750717	05482004 28800717
06592005 28340677	06586004 28380675	06580004 28390675
07542004 27970637	07509007 28020636	07481006 28020636
08439004 27670599	08475008 27750598	08410012 27730562
09524007 27380563	09408008 27470562	09387013 27440562
10439010 27090529	10410013 27150528	10403016 27140528
11407009 26820497	11376009 26840496	11398017 26900496
12388014 26390451	12400013 26410450	12404013 26450450
13380013 25730396		
14367014 25070346		

SIGHTING ALTITUDE 3989 FEET MDT
17 JULY 51
ACCLIMATION NO. 401

SIGNIFICANT FUEL DATA

148000-1401
WHITE SANDS

GROUT TIC CLOUDS AT 106°
32°40'44" N 106°41'46"
106°37'03" LONG E

TABLE 6

PRESSURE (C. O. T. TIC) MILLIBARS MSL FELT	ALTITUDE FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
880.7	3989.0	26.2	54.0
850.0	5011.6	22.3	53.6
820.4	6020.9	19.2	54.0
742.6	8820.6	15.1	52.0
700.0	10455.9	11.2	53.0
619.4	12500.6	6.0	49.0
526.4	18073.9	-3.2	46.0
500.0	19410.2	-5.3	41.0
485.4	20175.0	-6.4	41.0
461.8	21450.7	-9.6	37.7
438.4	22772.4	-10.0	36.9
400.0	25673.8	-15.9	35.0
386.4	25929.5	-17.6	33.1
351.2	26264.8	-21.8	30.5
300.0	32019.8	-30.4	24.0

JULY ALTIMETER 3419.0 FEET MSL
17 JULY 01 1130 HRS MDT
ACCLIMAT. 1.0. 46.1

UPPER AIR DATA
1,80020401
WHITE SANDS

OF OUTLIC CONDITIONS
32.40043 LAT DEG
106.37033 LONG DEG

TABLE 7

GEOPOTENTIAL ALTITUDE IN FEET	PRESSURE IN MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUIN. MTIP	SOUND KNOTS	WIND DATA DIRECTION HEIGHT, S (ft)	SPEED, KILOMETERS PER HOUR	INFLUX OR REFRACTION
3969.0	880.7	26.2	16.2	54.0	1016.8	676.7	20.0	8.0
4000.0	880.4	26.2	16.1	54.0	1016.6	676.7	20.0	7.9
4500.0	865.2	24.3	14.9	56.0	1000.0	674.3	278.5	6.0
5000.0	850.3	22.3	13.7	58.0	995.5	672.0	275.5	4.0
5500.0	835.5	20.8	13.9	64.8	983.1	670.4	206.0	2.1
6000.0	821.0	19.3	14.0	71.7	970.9	668.7	194.1	0.6
6500.0	806.5	18.5	12.6	68.6	955.8	667.6	208.6	1.5
7000.0	792.3	17.8	11.1	65.0	942.8	666.6	216.7	2.6
7500.0	778.3	17.0	9.6	61.4	929.0	665.6	218.6	2.6
8000.0	764.6	16.3	8.0	57.9	915.3	664.6	20.9	2.8
8500.0	751.1	15.6	6.4	54.3	901.9	663.6	228.9	1.8
9000.0	737.8	14.7	5.4	53.6	888.9	662.5	202.9	1.2
9500.0	724.6	13.5	5.4	58.2	873.5	661.1	331.9	2.7
10000.0	711.6	12.3	5.4	62.8	864.4	659.8	335.3	4.3
10500.0	698.9	11.1	5.3	67.5	852.4	658.4	334.7	5.8
11000.0	686.2	9.8	5.2	73.1	840.6	656.9	331.5	5.9
11500.0	673.7	8.5	5.1	78.7	824.0	655.5	330.0	6.0
12000.0	661.4	7.3	4.8	84.4	817.6	654.0	331.5	6.0
12500.0	649.4	6.0	4.5	90.0	806.5	652.5	324.0	5.1
13000.0	637.3	5.2	3.6	89.6	793.9	651.5	315.7	4.0
13500.0	625.4	4.4	2.7	89.3	781.6	650.4	276.1	3.6
14000.0	613.7	3.5	1.9	88.9	769.4	649.4	247.4	4.2
14500.0	602.3	2.7	1.0	88.6	757.5	648.4	248.1	3.8
15000.0	591.0	1.9	0.1	88.2	745.7	647.4	251.4	5.5
15500.0	580.0	1.0	-0.7	87.8	734.1	646.3	207.7	3.8
16000.0	569.2	.2	-1.6	87.5	722.7	645.3	278.1	4.5
16500.0	558.6	-0.6	-2.5	87.1	711.5	644.3	240.6	5.8
17000.0	548.1	-1.4	-3.3	86.8	700.4	643.2	273.5	7.0
17500.0	537.9	-2.3	-0.2	86.4	689.6	642.2	201.2	8.4
18000.0	527.9	-3.1	-5.1	86.1	678.9	641.2	250.4	9.8
18500.0	517.8	-3.9	-6.1	84.4	668.0	640.2	241.3	11.4
19000.0	506.0	-4.7	-7.2	82.5	657.3	639.2	237.6	11.2
19500.0	495.3	-5.4	-6.3	79.8	646.8	638.2	234.4	11.1
20000.0	485.7	-6.1	-10.1	73.3	636.2	637.3	232.7	11.2
20500.0	479.3	-7.2	-11.2	72.8	626.6	636.0	229.4	11.5
21000.0	470.0	-8.5	-12.0	75.5	617.4	634.4	224.0	12.5
21500.0	460.9	-9.6	-12.8	77.2	608.1	633.0	219.4	13.3
22000.0	451.9	-9.8	-14.3	69.3	599.7	632.8	215.0	14.1
22500.0	442.1	-9.9	-15.9	61.3	589.6	632.5	212.9	14.1
23000.0	434.4	-10.6	-17.3	57.8	573.6	631.7	211.7	13.6

STATION ALTITUDE 3,980 FEET MSL
 17 JULY 1961 1130 HRS MDT
 ALTITUDE: .0. +0.1

WEATHER DATA
 1980020061
 WHITE CLOUDS

INFLUENCING FACTORS
 32.4003 AIR DENSITY
 106.37035 TOTAL PRESSURE

TABLE 7 Con't

GEOPHYSIC PRESSURE	TEMPERATURE	REL.HUM.	SPEED OF SOUND	"IND. DATA"	INFLUX
ALITUDE MILLIBARS	AIR DEPOINT	PERCENT	KNOTS	DIR. TUV, SPEED KNOTS	OF REFRACTION
23,500.0	42.9 -11.9	-19.1	59.5	567.1 630.1	12.8 1.000134
24,000.0	41.7 -13.1	-19.0	61.3	559.7 626.6	11.8 1.000132
24,500.0	40.9 -14.4	-19.9	63.0	550.4 627.0	11.9 1.000130
25,000.0	40.1 -15.7	-20.8	64.7	542.3 625.4	12.3 1.000127
25,500.0	39.3 -19.7	-22.0	63.5	533.6 624.1	12.5 1.000125
26,000.0	38.5 -17.7	-23.3	61.5	525.0 622.9	14.5 1.000122
26,500.0	37.7 -16.6	-24.8	57.8	510.2 621.4	14.4 1.000120
27,000.0	36.9 -19.5	-26.4	54.2	507.6 620.6	14.1 1.000117
27,500.0	36.2 -20.4	-28.0	50.6	499.2 619.5	12.9 1.000115
28,000.0	35.5 -21.3	-29.6	46.9	496.9 618.4	12.5 1.000112
28,500.0	34.7 -22.3	-31.1	44.3	482.8 617.1	13.1 1.000110
29,000.0	34.0 -23.5	-32.5	42.8	474.9 615.7	13.8 1.000108
29,500.0	33.2 -24.6	-33.9	41.4	467.2 614.6	14.6 1.000106
30,000.0	32.5 -25.6	-35.3	39.9	454.7 612.4	15.3 1.000104
30,500.0	31.8 -26.9	-36.3	38.5	452.3 611.4	15.8 1.000102
31,000.0	31.1 -28.1	-32.2	37.0	444.9 610.0	1.000101
31,500.0	30.6 -29.2	-39.6	35.5	437.5 608.5	1.000099
32,000.0	30.2 -30.4	-41.0	34.1	430.7 607.1	1.000097

STATION ALITUDE 3989.00 FT. T.SL
17 JULY 61
ASCENSION I.O. 461 1130 HRS MDT

MONITOR LEVELS
100020461
WHITE SANDS,

OPTIC COORDINATES
32.40043 LAT DEG,
106.37035 LONG DEG

TABLE 8

PRESSURE MILLIPARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENIGRADE	WEATHER		WIND DATA	
			AT M. POINT OF POINT PERCENT CENIGRADE	REL. HUM. PERCENT	DIRECTION DEGREES (TRUE)	SPEED KNOTS
5500.0	5008.	22.3	13.6	58.	275.4	4.0
5000.0	6727.	18.2	11.9	67.	213.4	2.0
7500.0	8536.	15.5	6.2	54.	229.9	1.7
7000.0	10446.	11.2	5.3	67.	354.8	5.7
6500.0	12462.	6.1	4.5	90.	325.5	5.2
6000.0	14606.	2.5	0.1	86.	248.3	3.7
5500.0	16904.	-1.3	-3.2	87.	276.0	6.8
5000.0	19303.	-5.3	-3.0	81.	234.7	11.0
4500.0	22975.	-9.8	-14.6	68.	214.4	14.2
4000.0	25931.	-15.9	-20.4	65.	216.8	12.4
3500.0	28295.	-22.0	-30.7	45.	203.8	12.9
3000.0	31955.	-30.4	-41.1	34.		

STATION ALTIMETER 4651.37 FEET MSL
17 JULY 01 1230 HRS MDT
KSC, FLA., U.S.

SIG.IFICANT LEVEL DATA
1980100159
LC-37

GEOMETRIC
ALTITUDE
MILLIBARS MSL FEET
106.31232 001 0E6

GEOMETRIC
ALTITUDE
MILLIBARS MSL FEET
106.31232 001 0E6

PRESSURE GEOMETRIC
ALTITUDE
MILLIBARS MSL FEET

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENIGRADE	H.L.HUM. PERCENT
878.0	4951.4	26.9 17.4 50.0
875.0	4151.2	26.5 15.8 52.0
859.0	4988.9	23.4 15.2 60.0
806.4	6492.0	19.4 12.9 66.0
787.4	7166.4	18.5 10.6 57.0
773.0	7505.0	17.9 10.0 56.0
740.2	8098.6	14.4 10.0 57.0
721.4	9612.4	13.0 7.5 69.0
700.0	10443.8	11.4 6.1 70.0
675.8	11407.7	8.7 5.6 81.0
648.8	12514.5	6.3 5.0 81.0
531.0	13264.5	5.0 5.0 87.0
579.2	15553.5	1.5 -7 85.0
545.8	17122.5	-1.0 -5.0 74.0
537.6	17519.8	-1.9 -5.0 79.0
521.4	18319.0	-3.5 -7.1 76.0
500.0	19407.0	-5.1 -6.7 76.0
450.0	22075.7	-9.7 -14.7 67.0
443.2	22496.1	-10.4 -16.8 59.0
413.8	24224.3	-14.0 -14.5 63.0
400.0	25070.4	-15.2 -21.4 59.0
395.0	26018.1	-17.1 -23.4 58.0
371.4	26503.8	-18.6 -21.2 51.0
337.8	29209.8	-23.5 -33.0 41.0
300.0	32028.6	-30.3 -42.2 30.0

TABLE 9

SIGHTING ALTITUDE 4000±37 FEET, SL
17 JULY 61
ASCENSION, 40. 139

UPPER AIR DATA
14801 AND 154
LC-37
1230 HRS MOT

TABLE 10

GEOPHYSIC ALTITUDE	PRESSURE	TEMPERATURE	REL. HUM.	DE.SITY	SPD OF	IND. DATA	IND.
ALITUT	AIR DEPOINT	PERCENT	GM/CUBIC	SOUND	WIND DIRECTION	SPEED	WIND
FEET	DEGREES	CENTIGRADE	METER	KNOTS	DEGREES (10)	KNOTS	OF
40,510.4	870.0	28.9	17.4	50.0	100.5.4	680.0	2.5.0
45000.0	864.5	25.2	15.6	55.3	1001.5	675.6	2.9
50000.0	849.7	23.4	15.2	60.0	990.6	673.4	2.9
55000.0	834.9	22.0	14.4	62.0	971.0	671.8	3.0
60000.0	829.4	20.7	13.7	64.0	961.6	670.3	2.9
65000.0	816.2	19.4	12.9	65.9	953.3	668.7	2.9
70000.0	792.0	18.7	11.6	59.2	934.6	667.6	2.9
75000.0	776.1	17.9	9.0	56.0	921.1	666.5	2.9
80000.0	764.4	16.7	7.9	56.4	913.9	665.0	2.9
85000.0	750.8	15.4	6.9	56.7	901.9	663.4	2.9
90000.0	737.5	14.2	6.2	58.7	884.7	662.0	2.9
95000.0	724.3	13.2	7.3	67.1	871.4	661.0	2.9
100000.0	711.3	12.3	6.8	69.5	863.7	659.9	2.9
105000.0	698.6	11.2	5.1	70.6	851.3	658.7	2.9
110000.0	685.9	9.8	5.9	76.3	841.1	657.0	2.9
115000.0	673.5	8.5	5.4	81.0	828.8	656.5	2.9
120000.0	661.2	7.4	4.4	81.0	817.1	654.1	2.9
125000.0	649.1	6.3	3.3	81.0	807.5	652.8	2.9
130000.0	637.2	5.5	3.1	84.9	793.1	651.7	2.9
135000.0	625.5	4.6	2.6	86.8	780.9	650.8	2.9
140000.0	613.9	3.9	1.4	86.4	768.6	649.8	2.9
145000.0	602.5	3.1	1.0	85.9	751.6	648.9	2.9
150000.0	591.3	2.3	0.2	85.5	744.8	647.9	2.9
155000.0	580.4	1.6	-7	85.0	733.1	647.0	2.9
160000.0	569.5	*.8	-1.9	81.9	721.7	645.9	2.9
165000.0	558.8	-0.0	-3.3	78.4	710.4	644.9	2.9
170000.0	548.3	-0.8	-4.7	74.9	699.5	643.9	2.9
175000.0	538.0	-1.9	-5.0	78.8	688.8	642.6	2.9
180000.0	527.8	-2.9	-6.3	77.2	671.4	641.4	2.9
185000.0	517.3	-3.8	-7.4	76.0	661.9	640.2	2.9
190000.0	507.9	-4.5	-8.1	76.0	657.0	639.3	2.9
195000.0	498.2	-5.3	-9.9	75.7	646.3	638.4	2.9
200000.0	488.6	-6.1	-10.9	74.0	638.0	637.5	2.9
205000.0	479.1	-7.0	-11.1	72.3	627.8	636.2	2.9
210000.0	469.9	-7.8	-12.2	70.6	615.8	635.2	2.9
215000.0	460.8	-8.7	-13.4	68.9	608.0	634.1	2.9
220000.0	451.9	-9.6	-14.2	67.3	598.3	633.0	2.9
225000.0	443.1	-10.4	-16.8	59.0	588.7	631.9	2.9
230000.0	434.4	-11.4	-17.6	60.2	577.5	630.6	2.9
235000.0	425.9	-12.5	-16.4	61.3	568.5	629.4	2.9

STATION ALTITUDE 4051.37 FEET ASL
17 JULY 21 1230 HRS MDT
ASCESSION NO. 154

UPPER AIR DATA
198010159
LC-37

GEODETIC COORDINATES
32.40175 LAT DEG
106.31232 LONG DEG

TABLE 19 Cont'd

GEOMETRIC ALTITUDE ASL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CELSIUS	AIR TEMP POINT CENTIGRADE	REL.HUM. PERCENT	6M/CUBIC METER	DENSITY OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TH)	SPEED KNOTS	INDEX OF REFRACTION
24000.0	417.5	-13.5	-12.1	62.5	559.5	628.1	231.2	13.6	1.000132
24500.0	409.3	-14.4	-20.1	61.7	550.3	627.0	228.4	13.0	1.000130
25000.0	401.1	-15.1	-21.2	59.5	541.0	626.1	223.4	12.5	1.000127
25500.0	393.1	-16.1	-22.3	58.5	532.2	625.0	218.3	12.4	1.000124
26000.0	385.3	-17.1	-23.3	58.0	523.6	623.7	213.3	12.5	1.000122
26500.0	377.5	-17.9	-24.9	54.2	514.9	622.6	209.1	12.8	1.000119
27000.0	369.9	-18.8	-26.5	50.6	506.3	621.5	205.3	13.2	1.000117
27500.0	362.4	-19.9	-27.9	48.4	498.1	620.2	204.7	13.4	1.000115
28000.0	355.0	-20.9	-29.4	46.2	490.1	618.4	204.3	13.6	1.000112
28500.0	347.8	-22.0	-30.9	44.1	482.2	617.6	206.3	13.8	1.000110
29000.0	340.7	-23.1	-32.4	41.9	474.4	616.2	208.3	14.0	1.000108
29500.0	333.7	-24.2	-33.9	39.9	466.8	614.8	206.3	13.8	1.000106
30000.0	326.7	-25.4	-35.5	37.9	459.3	613.3	204.1	13.6	1.000104
30500.0	319.9	-26.6	-37.1	36.0	452.0	611.8	200.0	13.9	1.000102
31000.0	313.3	-27.8	-38.8	34.0	444.7	610.3	195.9	14.3	1.000100
31500.0	306.8	-29.0	-40.4	32.1	437.6	608.8	190.9	1.000099	
32000.0	300.4	-30.2	-42.1	30.1	430.7	607.2	188.7	1.000097	

SATION ALTITUDE 4651.37 FEET MSL
 17 JULY 61
 ASCENSION, .0. 159 1230 HRS MDT

ANALOGY LEVELS
 1980110159
 LC-37

GEOMETRIC COORDINATES
 32°40'17.5 LAT DEG
 106°31'23.2 LONG DEG

TABLE 11

PRESSURE MILLIBARS	FLEET	DEGREES GEOPOTENTIAL	TEMPERATURE		REL.HUM. PERCENT	DIR- ECTION DEGREES ITN)	WIND SPEED KNOTS
			AIR DEGREES	CENTIGRAU			
850.0	4985.	23.4	15.2	6.0	275.3	3.0	
800.0	6712.	19.1	11.9	63.	254.0	3.1	
750.0	8525.	15.3	6.6	57.	231.7	4.3	
700.0	10433.	11.4	6.1	70.	336.7	3.4	
650.0	12451.	6.4	3.4	61.	293.1	5.9	
600.0	14597.	2.9	.4	66.	269.9	7.2	
550.0	16899.	-.7	-4.5	75.	228.3	10.7	
500.0	19379.	-5.1	-8.7	76.	213.6	9.5	
450.0	22075.	-9.8	-14.4	66.	226.0	13.7	
400.0	25028.	-15.2	-21.4	59.	222.6	12.5	
350.0	28300.	-21.7	-30.4	45.	205.7	13.7	
300.0	31964.	-30.3	-42.2	30.			

STATION ALTITUDE 4051.37 FEET MSL
 17 JULY 61
 ASSEMBLY NO. 160

SIGNIFICANT EVENT DATA
 1980111116U
 LC-37

GEODETIC COORDINATES
 32.40175 LAT DEG
 106.31232 LON DEG

TABLE 1-2

PRESSURE, MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE, DEGREES CELSIUS	AIR DEWPOINT, DEGREES CELSIUS	REL. HUM. PERCENT
876.9	4051.4	31.0	16.0	42.0
875.8	4155.3	28.4	15.0	44.0
850.0	4959.3	26.1	14.9	50.0
824.6	5836.0	23.9	14.3	55.0
793.8	6925.3	20.6	13.1	62.0
755.2	8335.3	16.6	12.6	77.0
736.4	9041.0	15.1	11.0	85.0
708.4	10118.2	13.0	10.4	84.0
700.0	10447.9	12.0	10.7	80.0
680.4	11223.8	10.1	10.4	78.0
635.2	13695.6	5.0	3.5	90.0
626.0	13483.5	5.6	3.3	85.0
517.4	13060.8	4.7	1.7	81.0
599.8	14635.5	3.1	1.8	85.0
573.8	15814.9	1.4	-3.3	71.0
565.0	16224.2	.6	-5.0	77.0
531.6	17826.8	-2.4	-5.0	62.0
500.0	19423.9	-4.2	-9.0	59.0
451.2	22065.9	-9.1	-14.6	44.0
443.4	22509.6	-9.8	-16.1	60.0
434.8	23006.6	-10.5	-11.4	52.0
412.6	24330.2	-12.3	-19.0	57.0
400.0	25100.9	-13.5	-22.4	47.0
369.2	27099.6	-17.7	-26.2	39.0
342.0	28970.0	-21.8	-33.4	34.0
300.0	32096.2	-29.6	-47.4	28.0

JATION ALTITUDE 4651.37 FEET ASL
17 JULY 1951 1430 HRS MDT
ASCENSIO 1.0. 1.0

UPPER AIR DATA
14801100160
LC-37

GROUT COORDINATES
32°40'17.5" LAT E
106.31232 LONG DEG

TABLE 13

GEOPHYSIC ALTITUDE IN FEET	PRESSURE IN MILLIBARS	TEMPERATURE AIR DEGREES CELSIUS	REL. HUM. PERCENT	DEWPOINT METER	DENSITY GM/CU.M.	SPEED OF SOUND KNOTS	DIRECTION DEGREES (IN)	WIND DATA SPED KNOTS	WIND DATA DIR. OF REFRACTION	WIND DATA DIR. OF REFRACTION
4051.4	870.9	31.0	16.6	42.0	99.6.2	682.2	220.0	1.0	1.000299	
4500.0	860.5	27.4	15.0	46.6	99.3.4	677.9	201.9	2.0	1.000243	
5000.0	848.8	26.0	14.8	50.2	981.0	676.4	195.8	3.1	1.000240	
5500.0	834.2	24.7	14.5	53.1	966.3	674.9	193.0	4.3	1.000247	
6000.0	819.9	23.4	14.1	56.1	950.0	673.4	196.8	4.7	1.000243	
6500.0	805.7	21.9	13.6	59.3	944.4	671.6	176.5	4.6	1.000278	
7000.0	791.7	20.4	13.1	62.8	932.8	669.9	165.5	4.2	1.000274	
7500.0	777.8	19.0	13.0	68.1	920.9	668.5	145.4	3.8	1.000272	
8000.0	764.2	17.6	12.7	73.4	909.1	666.7	127.0	3.8	1.000269	
8500.0	750.8	16.2	11.7	74.2	897.1	665.0	129.4	2.1	1.000262	
9000.0	735.5	15.2	8.8	65.7	885.8	663.5	151.3	.5	1.000249	
9500.0	724.3	14.2	7.6	64.6	873.3	662.2	263.2	1.5	1.000243	
10000.0	711.4	13.2	6.6	64.1	860.9	661.0	272.7	3.1	1.000237	
10500.0	696.7	11.9	6.7	70.5	849.4	659.5	263.1	3.1	1.000235	
11000.0	686.1	10.7	6.5	75.7	837.6	658.1	292.6	3.3	1.000232	
11500.0	673.6	9.4	6.0	79.7	826.3	656.5	246.7	3.6	1.000229	
12000.0	661.4	8.0	5.3	83.0	815.3	654.9	300.1	3.9	1.000224	
12500.0	649.3	6.6	4.5	86.2	804.5	653.2	263.9	4.5	1.000220	
13000.0	637.4	5.3	3.7	89.4	793.8	651.6	271.6	5.4	1.000216	
13500.0	625.7	5.6	3.2	84.9	778.4	651.9	254.3	6.9	1.000211	
14000.0	614.2	4.4	1.6	81.7	767.6	650.4	242.7	8.8	1.000205	
14500.0	602.8	3.4	1.0	84.3	756.3	649.2	234.7	10.1	1.000201	
15000.0	591.6	2.6	-4	80.7	744.7	648.1	228.5	11.3	1.000196	
15500.0	580.6	1.9	-2.1	74.7	733.0	647.1	23.5	12.1	1.000196	
16000.0	569.8	1.0	-3.1	73.7	721.6	646.1	220.1	12.6	1.000185	
16500.0	559.1	*1	-3.3	77.9	710.5	645.0	219.8	13.5	1.000183	
17000.0	546.6	-9	-4.0	79.4	694.6	643.4	241.2	14.6	1.000179	
17500.0	536.2	-1.8	-4.6	61.0	688.9	642.7	23.1	15.4	1.000176	
18000.0	526.1	-2.6	-5.5	80.6	678.0	641.7	225.1	16.1	1.000172	
18500.0	516.0	-3.2	-6.7	76.5	666.0	641.0	225.0	16.5	1.000168	
19000.0	505.7	-3.7	-7.9	72.5	655.4	640.3	24.2	16.7	1.000164	
19500.0	495.5	-4.3	-9.2	68.9	644.6	639.5	223.6	16.6	1.000160	
20000.0	485.9	-5.3	-10.2	67.9	634.4	638.3	223.2	16.3	1.000156	
20500.0	474.5	-6.2	-11.3	67.0	624.5	637.2	225.4	15.4	1.000153	
21000.0	470.3	-7.1	-12.4	66.0	614.7	636.1	223.7	14.4	1.000150	
21500.0	461.2	-8.1	-13.4	65.1	605.0	634.9	224.5	13.4	1.000146	
22000.0	452.4	-9.0	-14.5	64.1	595.5	635.7	225.5	12.3	1.000143	
22500.0	443.6	-9.8	-16.0	60.1	585.9	632.7	229.0	12.3	1.000140	
23000.0	434.9	-10.5	-19.4	52.1	576.1	631.8	234.1	12.5	1.000136	
23500.0	426.4	-11.2	-18.6	53.9	566.3	631.0	235.7	13.4	1.000134	

STATION ALTITUDE 4051.37 FEET MSL
 17 JULY 81 1430 HRS MDT
 ASCENSION NO. 160

UPP, R AIR DATA
 1980180160
 LC-37

GEODETIC COORDINATES
 32.40175 LAT DEG
 106.31232 LONG DEG

TABLE 13 Cont

SOUNDING ALTITUDE METERS MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CELSIUS	REL.HUM. PERCENT	SPEECH IF METER	WIND DATA DIRECTION DEGREES (IN)	WIND SPEED KNOTS	INDEX OF REFRACTION		
24000.0	410.0	-11.9	-10.9	55.8	556.6	630.1	237.0	14.3	1.000132
24500.0	409.8	-12.6	-19.7	54.8	547.2	629.3	235.4	13.1	1.000129
25000.0	401.7	-13.3	-21.9	48.4	538.1	628.3	233.1	11.9	1.000126
25500.0	393.8	-14.3	-23.5	45.4	529.5	627.0	230.9	10.8	1.000123
26000.0	385.9	-15.4	-25.0	43.4	521.1	625.7	229.0	10.2	1.000121
26500.0	378.2	-16.4	-26.5	41.4	512.9	624.4	229.0	10.7	1.000118
27000.0	370.7	-17.5	-27.9	39.4	504.8	623.1	228.9	10.9	1.000116
27500.0	363.2	-18.6	-29.3	37.9	496.7	621.8	228.7	10.7	1.000114
28000.0	355.8	-19.7	-30.7	36.6	488.8	620.4	228.6	11.1	1.000112
28500.0	348.6	-20.8	-32.1	35.3	481.0	619.0	220.5	11.9	1.000110
29000.0	341.6	-21.9	-33.5	33.9	473.4	617.7	217.0	12.5	1.000108
29500.0	334.5	-23.2	-34.9	33.0	465.9	616.1	214.2	13.0	1.000106
30000.0	327.5	-24.4	-36.3	32.0	458.6	614.5	210.5	13.1	1.000104
30500.0	320.8	-25.7	-37.8	31.1	451.5	612.9	205.7	12.7	1.000102
31000.0	314.1	-27.0	-39.2	30.1	444.4	611.3			1.000100
31500.0	307.6	-28.3	-40.6	29.1	437.5	609.7			1.000099
32000.0	301.2	-29.6	-42.1	28.2	430.7	608.1			1.000097

SATION ALTITUDE 4951.37 FEET MSL
 17 JULY 01 1430 HRS MDT
 ASCENSION: 0.0 100

ANALOGY LEVELS
 19801H, 16U
 LC-37

TABLE 14

PRESSURE MILLIBARS	FEET	GEOPOTENTIAL DEGREES	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT		WIND DATA DIRECTION DEGREES (TRI)	SPEED KNOTS
				DEGREES	CENTIGRADE		
1150.0	4956.	26.1	14.4	50.	196.1	3.0	
800.0	6699.	21.3	13.3	61.	172.3	4.6	
750.0	8521.	16.2	11.5	74.	129.0	2.1	
700.0	10437.	12.0	6.7	70.	281.9	5.1	
650.0	12460.	6.7	4.5	86.	284.9	4.5	
600.0	14609.	3.1	0.8	85.	235.1	10.4	
550.0	16912.	-7	-3.9	79.	221.0	14.5	
500.0	19396.	-4.2	-9.0	69.	225.7	16.6	
450.0	22099.	-9.2	-14.9	65.	226.4	12.3	
400.0	25066.	-13.5	-22.4	47.	232.7	11.7	
350.0	28355.	-20.6	-31.8	36.	221.0	11.7	
300.0	32031.	-29.8	-42.4	28.			

